

**REMARKS/ARGUMENTS**

In view of the following remarks, the applicants respectfully submit that the pending claims are not rendered obvious under 35 U.S.C. § 103. Accordingly, it is believed that this application is in condition for allowance. **If, however, the Examiner believes that there are any unresolved issues, or believes that some or all of the claims are not in condition for allowance, the applicants respectfully request that the Examiner contact the undersigned to schedule a telephone Examiner Interview before issuing any further action on the merits.**

The applicants will now address each of the issues raised in the outstanding Office Action.

**Rejections under 35 U.S.C. § 103**

Claims 1, 3, 5-33, 35 and 37-66 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,754,939 ("the Herz patent") in view of U.S. Patent No. 5,724,567 ("the Rose patent"). The applicants respectfully request that the Examiner reconsider and withdraw this ground of rejection in view of the following.

First, the applicants note that claims 27-32 and 59-64 have been canceled.

Before addressing various patentable features of the claims, the applicants respectfully submit that the Examiner picks, chooses and combines various disclosures of the Herz patent not directly related to each other as

teaching various aspects of the claimed invention. (See Paper No. 20091108, pages 3-6.) However, the Examiner has not established that the various cited elements in the Herz patent are **arranged as in the claims**.

**1. Claims 1, 3, 5, 6, 33, 35, 37 and 38**

Independent claims 1 and 33 are not rendered obvious by the Herz and Rose patents because the cited patents do not teach or make obvious determining ... initial user profile information for the user **using information included in past search queries submitted to a search engine by the user, wherein such information is independent of documents returned as search results to the past search queries**.

The Examiner contends that the "query profile" discussed on column 66, lines 57-67 of the Herz patent teaches this feature. (See Paper No. 20091108, page 8.) The applicants respectfully disagree. More specifically, the "query profile" discussed on column 66, lines 57-67 of the Herz patent includes information from a single search query (as opposed to plural search queries as claimed), and can be updated using document cluster information (as opposed to being independent of the documents returned as search results as claimed). (See Column 69, lines 1-42 of the Herz patent.) Further, column 20, lines 24-26 of the Herz patent, cited by the Examiner (See Paper No. 20091108, page 8.), concerns retrieved documents, **not** queries.

The Examiner apparently does not rely on the Rose patent to compensate for this deficiency of the Herz patent. Thus, independent claims 1 and 33 are not

rendered obvious by the Herz and Rose patents for at least the foregoing reason. Since claims 3, 5 and 6 directly or indirectly depend from claim 1 and since claims 35, 37 and 38 directly or indirectly depend from claim 33, these claims are similarly not rendered obvious by the Herz and Rose patents.

## **2. Claims 7, 13, 39 and 45**

Independent claims 7 and 39 are not rendered obvious by the Herz and Rose patents because these patents, either taken alone or in combination, neither teach, nor suggest, acts of inferring user profile information for the user by (i) defining a node for each of a number of documents and the user, (ii) adding edges between nodes if there is an association between the nodes to define a graph, and (iii) ***inferring user profile information for the user using a topology of the graph and user profile information of other documents.***

The Examiner refers to Figures 1 and 2 of the Herz patent, and contends that the nodes (computers) and links (communications links) teach these features. (See Paper No. 20091108, page 4.) The Examiner further argues that in the Herz patent, the information servers contain the target documents, citing column 26, line 37, and column 29, lines 1-5. (See Paper No. 20091108, pages 4 and 5.) However, Figures 1 and 2 of the Herz patent show nodes and links in the context of computers that can communicate with one another over a communications network. These nodes and links are in no way related to nodes and edges of a ***graph, the topology of which is used to infer user profile information.***

The Examiner then argues that the system can link users to documents based on the users' interests in the documents or other documents associated with each link, citing column 60, lines 62-64. (See Paper No. 20091108, page 5.) The cited section of the Herz patent merely concerns ranking links in a hypertext document. This neither teaches, nor makes obvious, nodes and edges of a **graph, the topology of which can be used to infer user profile information.**

The Examiner further argues that since the system can determine relationships between users and documents, "one skilled in the art **could** easily infer from these relationships to **create graphs**, [Emphasis added.]" citing column 10, lines 46-53. (Paper No. 20091108, pages 5 and 6) The applicants respectfully disagree. First, the cited portion of the Herz patent merely discusses that a user might like movies similar to those the user has liked in the past, or might like movies liked by similar users. The fact that a system "**could be**" modified is not the proper standard for showing obviousness under 35 U.S.C. § 103. The fact that graph theory defines objects with "nodes" and connections with "edges" neither teaches, nor makes obvious, (i) defining a node for each of a number of documents and the user, wherein each node represents a particular one of the number of documents or the user, (ii) adding edges between nodes if there is an association between the nodes to define a graph, and (iii) **inferring user profile information for the user using a topology of the graph and user profile information of other documents.**

The nodes and links in the Herz patent are described in a totally different context than recited in

independent claims 7 and 39. When interpreting the terms "nodes" and "edges", the Examiner improperly ignores the specification as it would be interpreted by one of ordinary skill in the art. The applicants respectfully note that the MPEP provides that the scope of claims in patent applications is determined not solely on the basis of the claim language, but upon giving claims their broadest reasonable construction "in light of the specification as it would be interpreted by one of ordinary skill in the art." (MPEP 2111) In the instant application, the specification discusses "nodes" in terms of representing users and documents on a graph and "edges" between the user node and document nodes for the top Web pages that were returned by a search engine in response to search queries that the user submitted, and perhaps between pairs of documents that have links (e.g., hyperlinks) between them. Specifically, with reference to Figures 10 and 11, the specification states:

In one exemplary embodiment of the present invention, the association information 1070 may be **a graph in which users and documents are represented as nodes** 1072 and 1076, respectively. Figure 11 is a flow diagram of an exemplary method 1100 that may be used to associate users and/or documents in a manner consistent with the present invention. As shown, **nodes may be defined for each user and document.** (Block 1110) For each of the user nodes 1072, **edges** 1074 (which indicate an association) **may be drawn between the user node and document nodes for the top Web pages that were returned by a search engine in response to search queries that the user submitted.** (In a variant, the edges 1074 could be drawn only to Web pages

**that the user selected** (e.g., clicked on)). Additionally, **edges 1078 may be drawn between pairs of documents that have links (e.g., hyperlinks) between them.** (Block 1120) Although not shown, user-to-user associations may also be generated. For example, edges may be added between users that have visited one or more of the same documents. [Emphasis added.]

(Page 25, lines 4-18 of the Specification) Thus, using the specification, one of ordinary skill in the art at the time of the invention would interpret "nodes" and "edges" as representations of users and documents, and relationships between users and documents, on a graph.

In the Response to Arguments section, the Examiner states:

Regarding the aspect of nodes and graphs, par. 111 of applicant's published specification teaches "In one exemplary embodiment of the present invention, the association information 1070 may be a graph in which users and documents are represented as nodes 1072 and 1076, respectively". Therefore, a node appears to be an association of user and document. As such, Fig. 5A of Rose teaches "each user profile also comprises a vector, based upon the user's indications as to his relative interest in previously retrieved documents. Each time a user provides a new response to a retrieved message, the profile vector is modified in accordance with the results of the indication". Another representation of a user-document node can be found in Fig. 6 of Rose.

"Referring to FIG. 6, each time a user retrieves a document and subsequently provides an indication of interest, the result can be stored in a table 42. Using the information in this table, a correlation matrix R can be generated; whose entries indicate the degree of correlation between the various users' interests in commonly retrieved messages" (Rose, C7, L6-10). Both of these representations are topologies or configuration (Per Merriam Webster's dictionary) of user-document of interest or inferred interests by user.

(Paper No. 20091108, pages 8 and 9) However, independent claim 7 recites, in pertinent part:

- i) **defining a node for each of a number of documents and the user, wherein each node represents a particular one of the number of documents or the user,**
- ii) **adding edges between nodes** if there is an association between the nodes to define a graph, and
- iii) **inferring user profile information** for the user using a topology of the graph **and user profile information of other documents** [Emphasis added.]

Neither recited patent discloses such features of independent claim 7. Furthermore, the Examiner argues that acts that are conditionally performed are not given weight since they need not be performed if the condition is not met. (See, e.g., Paper No. 20091108, page 6.) As the applicants previously noted to the Examiner, claims 7-12 and 39-44 (claims 8-12 and 40-44 are separately argued later) had been amended to recite that the

condition is met (in which case the conditional act is performed). Therefore, the Examiner should have given such elements of these claims patentable weight.

Moreover, although the Examiner apparently argues, on the one hand, that the information servers of the Herz patent contain documents to which the user can be linked, and that one could infer a graph from purported relationships between users and other users or users and documents, the Examiner later concedes that the Herz patent does not describe a node that represents a document or users. (See Paper No. 20091108, page 6.) In an attempt to compensate for this admitted deficiency of the Herz patent, the Examiner relies on the Rose patent. In particular, the Examiner contends that the Rose patent teaches various concepts concerning users and documents. (See Paper No. 20091108, pages 6 and 7.) However, the applicants respectfully note that the cited portions of the Rose patent concern the notions of "term frequency" and "inverse document frequency" (TF/IDF), state that users and documents can be represented with a term vector, state that a user's profile vector may be updated, and state that similarities between term vectors can be determined using a cosine distance. (See column 6, lines 9-17, 28-35 and 55-60 of the Rose patent, cited by the Examiner.) The applicants frankly do not see how the cited sections of the Rose patent compensate for the conceded deficiency of the Herz patent. That is, the applicants cannot see how the cited portions of the Rose patent discussed above, which concern term vectors, teach a node (of a graph) representing documents or users. The applicants note that Figures 5A and 5B of the Rose patent (cited by the Examiner) merely illustrate the notion of



cosine distance between feature vectors. They do not teach, nor do they suggest, a graph including nodes, some of which are connected.

The Examiner also notes that "the table in figure 6 of Rose shows on the Y axis the different documents and the X axis the different users associated with these documents," and concludes, "Therefore, once these relationships are established it would have been obvious for one skilled [in the] art at the time of applicant's invention to draw lines or edges between the documents that are associated with particular users." (Paper No. 20091108, page 7.) The applicants respectfully disagree, and respectfully note that even if the Rose patent were modified as proposed by the Examiner, such a modification would still neither teach, nor make obvious, inferring user profile information for the user using a topology of the graph and user profile information *of other documents* as claimed. More specifically, referring to the table of Figure 6, the Rose patent states:

Using the information in this table, a correlation matrix R can be generated, whose entries **indicate the degree of correlation between the various users' interests** in commonly retrieved messages. More precisely, element  $R_{ij}$  contains a measure of **correlation between the i-th user and the j-th user**. One example of such a matrix is the correlation matrix illustrated at 44 in FIG. 6.  
[Emphasis added.]

(Column 6, line 67 through column 7, line 6 of the Rose patent.) Determining a degree of correlation **between various users**, neither teaches, nor makes obvious,

inferring user profile information for the user using a topology of the graph and user profile information **of other documents** as claimed. This deficiency of the recited patents is not addressed anywhere in the Office Action.

Finally, the Examiner concludes, without any substantiation, that it would have been obvious for one skilled in the art at the time of the invention to have a system that has "graphical representation of users and/or document[s]. The motivation for one skilled to use graph would be to establish relationships between the user and/or document." (Paper No. 20091108, page 7) The Examiner has not shown support in the Herz and Rose patents to support this assertion, nor has the Examiner proffered any obvious reason (for example, applying a known technique to a known device or method ready for improvement, to yield predictable results) to modify these patents as he proposes.

Thus, independent claims 7 and 39 are not rendered obvious by the Herz and Rose patents for at least the foregoing reasons. Since claims 13 and 45 depend from claims 7 and 39, respectively, these claims are similarly not rendered obvious by the Herz and Rose patents.

### **3. Claims 8 and 40**

First, since claims 8 and 40 depend from claims 7 and 39, respectively, these claims are not rendered obvious by the Herz and Rose patents for at least the reasons discussed in part (2) above.

Second, these claims further recite that an edge is added (or act of adding an edge adds an edge) between first and second nodes **if a document corresponding to the**

*first node was returned in a search results page to a search query from the user corresponding to the second node, and that (wherein) at least one document corresponding to the first node was returned in a search results page to a search query from the user corresponding to the second node.* Although the Examiner does not expressly address these claims, he does seem to argue that this type of "limitation does not have to happen, and can be interpreted as such[.]" (See Paper No. 20091108, page 6.) The applicants respectfully disagree since *the second wherein clauses of these claims recite that the condition does in fact occur.* Thus, these claims are not rendered obvious by the Herz and Rose patents for at least this additional reason.

#### **4. Claims 9 and 41**

First, since claims 9 and 41 depend from claims 7 and 39, respectively, these claims are not rendered obvious by the Herz and Rose patents for at least the reasons discussed in part (2) above.

Second, these claims further recite that an edge is added (or act of adding an edge adds an edge) between first and second nodes *if a document corresponding to the first node was selected by the user corresponding to the second node, and that (wherein) at least one document corresponding to the first node was selected by the user corresponding to the second node.* Although the Examiner does not expressly address these claims, he does seem to argue that this type of "limitation does not have to happen, and can be interpreted as such[.]" (See Paper No. 20091108, page 6.) The applicants respectfully disagree since *the second wherein clauses of these claims*

**recite that the condition does in fact occur.** Thus, these claims are not rendered obvious by the Herz and Rose patents for at least this additional reason.

**5. Claims 10 and 42**

First, since claims 10 and 42 depend from claims 7 and 39, respectively, these claims are not rendered obvious by the Herz and Rose patents for at least the reasons discussed in part (2) above.

Second, these claims further recite that an edge is added (or act of adding an edge adds an edge) between first and second nodes ***if a document corresponding to the first node is linked with a document corresponding to the second node***, and that (wherein) ***at least one document corresponding to the first node is linked with at least one document corresponding to the second node***. Although the Examiner does not expressly address these claims, he does seem to argue that this type of "limitation does not have to happen, and can be interpreted as such[.]" (See Paper No. 20091108, page 6.) The applicants respectfully disagree since ***the second wherein clauses of these claims recite that the condition does in fact occur.*** Thus, these claims are not rendered obvious by the Herz and Rose patents for at least this additional reason.

**6. Claims 11 and 43**

First, since claims 11 and 43 depend from claims 7 and 39, respectively, these claims are not rendered obvious by the Herz and Rose patents for at least the reasons discussed in part (2) above.

Second, these claims further recite that an edge is added (or act of adding an edge adds an edge) between

first and second nodes *if a document corresponding to the first node was visited by a set of users that have visited another document corresponding to the second node*, and that (wherein) *at least one document corresponding to the first node was visited by a set of users that have visited at least one other document corresponding to the second node*. Although the Examiner does not expressly address these claims, he does seem to argue that this type of "limitation does not have to happen, and can be interpreted as such[.]" (See Paper No. 20091108, page 6.) The applicants respectfully disagree since *the second wherein clauses of these claims recite that the condition does in fact occur*. Thus, these claims are not rendered obvious by the Herz and Rose patents for at least this additional reason.

#### **7. Claims 12 and 44**

First, since claims 12 and 44 depend from claims 7 and 39, respectively, these claims are not rendered obvious by the Herz and Rose patents for at least the reasons discussed in part (2) above.

Second, these claims further recite that (wherein) an edge is added (or act of adding an edge adds an edge) between first and second nodes *if a user corresponding to the first node visited a set of one or more documents also visited by another user corresponding to the second node*, and that (wherein) *the user corresponding to the first node visited a set of one or more documents also visited by the other user corresponding to the second node*. Although the Examiner does not expressly address these claims, he does seem to argue that this type of "limitation does not have to happen, and can be

interpreted as such[.]” (See Paper No. 20091108, page 6.) The applicants respectfully disagree since ***the second wherein clauses of these claims recite that the condition does in fact occur***. Thus, these claims are not rendered obvious by the Herz and Rose patents for at least this additional reason.

**8. Claims 14-19, 26, 46-51, 58, 65 and 66**

Independent claims 14 and 46 are not rendered obvious by the Herz and Rose patents because these patents do not teach acts of ***determining user profile information for a document*** using both initial user profile information and inferred user profile information, ***associating with the document, the determined user profile information for the document***, and storing the association of the document with the determined user profile information for the document. As indicated by Figure 5 of the present application, user profile information 524 may be associated with a document 522 (and other user profile information 514, 534 and 544 may be associated with other things 512, 532 and 542).

The Examiner cites column 10, lines 43-46 of the Herz patent as teaching recording associations between documents (movies) and users. (See Paper No. 20091108, pages 5 and 6.) Although movies can have attributes including a "list of customers who have previously rented this movie" (See, e.g., column 10, lines 22 and 23.), ***such a list, by itself, is not user profile information for a document***, which is associated with the document, and which association is stored, as recited in claims 14 and 46. That is, a list of customers, by itself, is insufficient to provide attributes of those customers.

Thus, independent claims 14 and 46 are not rendered obvious by the Herz and Rose patents for at least the foregoing reason. Since claims 15-19 and 26 directly or indirectly depend from claim 14 and since claims 47-51 and 58 directly or indirectly depend from claim 46, these claims are similarly not rendered obvious by the Herz and Rose patents.

**9. Claims 20 and 52**

First, since claims 20 and 52 depend from claims 14 and 46, respectively, these claims are not rendered obvious by the Herz and Rose patents for at least the reasons discussed in part (8) above.

Second, these claims further recite that the act of inferring user profile information for the document includes (i) defining a node for each of a number of documents and for each of a number of users, wherein each node represents a particular one of the number of documents or a particular one of the number of users, (ii) adding edges between nodes if there is an association between the nodes to define a graph, wherein there is an association between at least two of the nodes, and (iii) inferring user profile information for the document using a topology of the graph and user profile information of users and of other documents. As discussed in part (2) above, the Herz and Rose patents do not teach or make obvious **inferring user profile information for a user** in this way. The Herz and Rose patents similarly do not teach or make obvious **inferring user profile information for a document** in this way. Thus, these claims are not rendered obvious by the Herz and Rose patents for at least this additional reason.

**10. Claims 21 and 53**

First, since claims 21 and 53 depend from claims 20 and 52, respectively, these claims are not rendered obvious by the Herz and Rose patents for at least the reasons discussed in part (9) above.

Second, these claims further recite that an edge is added (or act of adding an edge adds an edge) between first and second nodes ***if a document corresponding to the first node was returned in a search results page to a search query from the user corresponding to the second node***, and that (wherein) ***at least one document corresponding to the first node was returned in a search results page to a search query from the user corresponding to the second node***. Although the Examiner does not expressly address these claims, he does seem to argue that this type of "limitation does not have to happen, and can be interpreted as such[.]" (See Paper No. 20091108, page 6.) The applicants respectfully disagree since ***the second wherein clauses of these claims recite that the condition does in fact occur***. Thus, these claims are not rendered obvious by the Herz and Rose patents for at least this additional reason.

**11. Claims 22 and 54**

First, since claims 22 and 54 depend from claims 20 and 52, respectively, these claims are not rendered obvious by the Herz and Rose patents for at least the reasons discussed in part (9) above.

Second, these claims further recite that an edge is added (or act of adding an edge adds an edge) between first and second nodes ***if a document corresponding to the***



*first node was selected by the user corresponding to the second node, and that (wherein) at least one document corresponding to the first node was selected by the user corresponding to the second node.* Although the Examiner does not expressly address these claims, he does seem to argue that this type of "limitation does not have to happen, and can be interpreted as such[.]" (See Paper No. 20091108, page 6.) The applicants respectfully disagree since *the second wherein clauses of these claims recite that the condition does in fact occur.* Thus, these claims are not rendered obvious by the Herz and Rose patents for at least this additional reason.

#### **12. Claims 23 and 55**

First, since claims 23 and 55 depend from claims 20 and 52, respectively, these claims are not rendered obvious by the Herz and Rose patents for at least the reasons discussed in part (9) above.

Second, these claims further recite that an edge is added (or act of adding an edge adds an edge) between first and second nodes *if a document corresponding to the first node is linked with a document corresponding to the second node, and that (wherein) at least one document corresponding to the first node is linked with at least one document corresponding to the second node.* Although the Examiner does not expressly address these claims, he does seem to argue that this type of "limitation does not have to happen, and can be interpreted as such[.]" (See Paper No. 20091108, page 6.) The applicants respectfully disagree since *the second wherein clauses of these claims recite that the condition does in fact occur.* Thus,

these claims are not rendered obvious by the Herz and Rose patents for at least this additional reason.

**13. Claims 24 and 56**

First, since claims 24 and 56 depend from claims 20 and 52, respectively, these claims are not rendered obvious by the Herz and Rose patents for at least the reasons discussed in part (9) above.

Second, these claims further recite that an edge is added (or act of adding an edge adds an edge) between first and second nodes ***if a document corresponding to the first node was visited by a set of users that have visited another document corresponding to the second node***, and that (wherein) ***at least one document corresponding to the first node was visited by a set of users that have visited at least one other document corresponding to the second node***. Although the Examiner does not expressly address these claims, he does seem to argue that this type of "limitation does not have to happen, and can be interpreted as such[.]" (See Paper No. 20091108, page 6.) The applicants respectfully disagree since ***the second wherein clauses of these claims recite that the condition does in fact occur***. Thus, these claims are not rendered obvious by the Herz and Rose patents for at least this additional reason.

**14. Claims 25 and 57**

First, since claims 25 and 57 depend from claims 20 and 52, respectively, these claims are not rendered obvious by the Herz and Rose patents for at least the reasons discussed in group (9) above.

Second, these claims further recite that an edge is added (or act of adding an edge adds an edge) between first and second nodes ***if a user corresponding to the first node visited a set of one or more documents also visited by another user corresponding to the second node,*** and that (wherein) ***the user corresponding to the first node visited a set of one or more documents also visited by the other user corresponding to the second node.*** Although the Examiner does not expressly address these claims, he does seem to argue that this type of "limitation does not have to happen, and can be interpreted as such[.]" (See Paper No. 20091108, page 6.) The applicants respectfully disagree since ***the second wherein clauses of these claims recite that the condition does in fact occur.*** Thus, these claims are not rendered obvious by the Herz and Rose patents for at least this additional reason.

#### **15. Claims 65 and 66**

First, since claims 65 and 66 depend from claims 14 and 46, respectively, these claims are not rendered obvious by the Herz and Rose patents for at least the reasons discussed in group (8) above.

Second, these claims further recite that the determined user profile information is associated with the document, not with a user. This feature, which was apparently not specifically addressed by the Examiner, further distinguishes these claims over the Herz and Rose patents. Thus, these claims are not rendered obvious by the Herz and Rose patents for at least this additional reason.

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### Conclusion

In view of the foregoing remarks, the applicants respectfully submit that the pending claims are in condition for allowance. Accordingly, the applicants request that the Examiner pass this application to issue.

Any arguments made in this request for reconsideration pertain **only** to the specific aspects of the invention **claimed**. Any claim amendments or cancellations, and any arguments, are made **without prejudice to, or disclaimer of**, the applicant's right to seek patent protection of any unclaimed (e.g., narrower, broader, different) subject matter, such as by way of a continuation or divisional patent application for example.

Since the applicants' remarks, amendments, and/or filings with respect to the Examiner's objections and/or rejections are sufficient to overcome these objections and/or rejections, the applicants' silence as to assertions by the Examiner in the Office Action and/or to certain facts or conclusions that may be implied by objections and/or rejections in the Office Action (such as, for example, whether a reference constitutes prior art, whether references have been properly combined or modified, whether dependent claims are separately patentable, etc.) is not a concession by the applicants that such assertions and/or implications are accurate, and that all requirements for an objection and/or a rejection have been met. Thus, the applicants reserve the right to analyze and dispute any such assertions and implications in the future.

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Respectfully submitted,

February 10, 2010

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